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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,474	09/22/2003	Seok Woo Lee	8733.916.00-US	5512

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EXAMINER	
CALEY, MICHAEL H	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/665,474	LEE ET AL.	
	Examiner	Art Unit	
	Michael H. Caley	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 7, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imaeda (U.S. Patent No. 6,613,599) in view of Nakatani et al. (U.S. Patent No. 4,862,153 "Nakatani").

Regarding claim 1, Imaeda discloses an LCD device having:

a liquid crystal panel (Figures 11 and 12 element 310); and

a film (Figures 11 and 12 element 350) connected to the liquid crystal panel with a drive integrated circuit (Figures 11 and 12 element 352) that drives the liquid crystal panel mounted thereon, wherein the drive integrated circuit is disposed on the film facing the bottom of the LCD device.

In the fourth embodiment as presented in Figures 11 and 12 described above, Imaeda fails to disclose details of the frame and supports of the display. In a separate embodiment, however, Imaeda teaches a main support (Figure 16 element 2010) for a display implemented in a mobile phone on which a liquid crystal panel is installed on a front surface thereof and the drive integrated circuit faces when configured as shown in Figure 12. By inserting the display

device disclosed in embodiment 4 (Figures 11 and 12) into an electronic device such as disclosed in embodiment 7 (Figure 16), the drive integrated circuit faces toward the back of the phone. At the back of the phone, Imaeda teaches part of the main support (2010) toward which the drive integrated circuit would face the front surface thereof. As a pictorial example of a flat panel display with framing in which the drive integrated circuit faces the rear of the device, Nakatani teaches a main support (Figure 5 element 4) on which a liquid crystal panel (element 5) is installed and is also faced on a front side by the drive integrated circuit (element 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed a main support as proposed in the display device disclosed by Imaeda. One would have been motivated to provide such a main support as an outer casing such as in a mobile phone implementation to protect the display and other electronics from the environment, or as a support such as taught by Nakatani to advantageously provide secure and compact placement for the display components.

Regarding claim 7, Imaeda as modified by Nakatani discloses a panel guide as between the main support and the liquid crystal panel to support the liquid crystal panel (Figure 12 element 320).

Regarding claim 15, Imaeda as modified by Nakatani discloses a backlight (Figure 11 elements 371 and 330).

Claim 2-6 and 8-10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imaeda in view of Nakatani and in further view of Murayama et al. (U.S. Patent No. 6,160,605 "Murayama").

Imaeda as modified by Nakatani fails to explicitly disclose a control board electrically connected to the film. Murayama, however, teaches a control board (Figure 3 element 109) as electrically connected to the film (Figure 3 elements 207 and 210). Additionally, Imaeda discloses a flexible wiring substrate flexible wiring substrate for external connection (Figure 12 element 363).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have connected a control board to the external connection element disclosed by Imaeda such that the control board would be electrically connected to the film. Murayama teaches such a control board as essential to provide the power supply voltage and control signals to the drive integrated circuits (Column 6 lines 11-18). One would have been motivated to provide such a control board in the display device disclosed by Imaeda as a means of providing power and control signals to the driving IC devices, thus enabling a functioning display.

Regarding claim 3, Imaeda as modified by Nakatani and Murayama discloses a printed circuit board between the film and the control board and a plurality of signal wiring patterns for transmitting a control signal from the control board to the film (Figure 12 element 360; Column 15 lines 21-53).

Regarding claims 4 and 9, Imaeda as modified by Nakatani and Murayama discloses a flexible printed circuit film connecting the printed circuit board to the control board (Figure 12 element 363).

Regarding claim 5, Imaeda as modified by Nakatani and Murayama discloses the printed circuit board as facing only the front surface of the main support (Figure 12 element 360, faces downward similarly to drive integrated circuit).

Regarding claim 6, Imaeda as modified by Nakatani and Murayama fails to disclose the printed circuit board as facing only a side surface of the main support. Imaeda teaches the main support (Figure 16 element 2010) as having a side surface. Furthermore, Nakatani teaches the printed circuit board placement as versatile and dependent upon the shape of the display device (Column 4 lines 29-33).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have placed the printed circuit board downward along the side surface of the main support in the display device disclosed by Imaeda. One would have been motivated to place the printed circuit board as an engineering expediency as taught by Nakatani to optimize the shape of the display device for a particular application. For instance, placing the circuit board along the side surface of a main support would be advantageous to reduce the thickness of the device.

Regarding claim 8, Imaeda fails to disclose a panel guide having a groove into which the drive integrated circuit is inserted between the liquid crystal panel and the main support.

Nakatani, however, teaches such a panel guide (Nakatani: Figure 5 element 4) when the casing disclosed by Imaeda (Imaeda: Figure 16 element 2010) is regarded as the main support.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have placed a panel guide having a groove in the display device disclosed by Imaeda. A panel guide and groove such as taught by Nakatani is advantageous to provide secure and compact placement for the display components.

Regarding claim 10, Imaeda fails to disclose the control board as disposed at a rear surface of the main support. Nakatani, however, teaches such a placement when the frame (Figure 5 element 4) is regarded as the main support.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have placed the control board at a rear surface of the main support. Imaeda discloses the external circuit (control board) as connected through a flexible wiring substrate (Figure 12 element 363). Nakatani teaches the control board as advantageously wrapped behind a support (Nakatani: Figure 5 element 4) to minimize the external circuit connecting region (Column 3 lines 5-22). Furthermore, the main support located between the driving integrated circuit and the control board is effective to shield and insulate the electrical components from one another.

Claims 11-14, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imaeda in view of Nakatani and in further view of Ueda et al. (U.S. Patent No. 5,838,412 "Ueda").

Regarding claims 11-14, Imaeda as modified by Nakatani fails to disclose a metal case top as combined with the main support by screws and as bent to cover an edge of the liquid crystal panel. Ueda, however, teaches such a case top (Figure 26 element SHD; Column 8 lines 11-19; Column 9 lines 11-15).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included a case top as proposed in the liquid crystal display device disclosed by Imaeda. One would have been motivated to include such a case top as a means of protecting the top side of the display device as well as to aid in securely fixing the display components (Column 9 lines 28-31).

Regarding claims 16 and 17, Imaeda as modified by Nakatani fails to explicitly disclose a data film as attached to a data pad on the liquid crystal panel and a gate film as attached to a gate pad. Imaeda, however, teaches film and pad portions on the liquid crystal panel (Figure 2 elements 141, 140a, 117, and 111a). Ueda teaches pads and films as designated as for gate drivers and data drivers (Figure 29).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the pad and film portions disclosed by Imaeda as gate and data film and pad areas. As is conventional in the art, gate and data drivers are necessary to drive an array of thin film transistor (TFT) switching elements. One would have been motivated to form the gate and data pad and film areas accordingly to benefit from the known advantages of having TFT switching elements, such as a fast switching speed.

Response to Arguments

Applicant's arguments filed 8/2/05 have been fully considered but they are not persuasive.

Regarding the rejection of claim 1 as being unpatentable over Imaeda in view of Nakatani, Applicant contends that the references fail to teach the claimed feature of "a drive integrated circuit is disposed on the film facing the front surface of the main support".

The examiner maintains that Imaeda in view of Nakatani teaches this feature according to the rationale provided in the above rejection of claim 1.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael H. Caley whose telephone number is (571) 272-2286. The examiner can normally be reached on M-F 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael H. Caley
October 14, 2005
mhc

ANDREW SCHECHTER
PRIMARY EXAMINER